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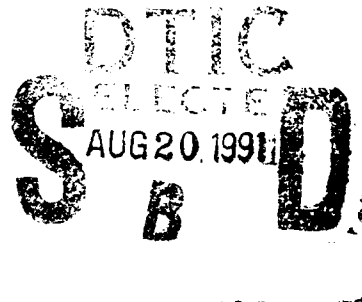
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A RAND NOTE

The 2 + 2 + 4 Recruiting Experiment:
Design and Initial Results

Richard Buddin, J. Michael Polich

October 1990



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This Note describes the design and first six months of experience for a national experiment on a proposed new recruiting program for the U.S. Army. The program, called the "2 + 2 + 4" recruiting option, is one of the tools the Army believes could help sustain its ability to attract high-quality young people during difficult recruiting periods in the future. The authors present RAND's design for the test as a controlled experiment, similar to earlier enlistment incentive tests, and present preliminary tabulations of results during the first six months of the test. The test established a framework for systematic assessment of the 2 + 2 + 4 program and set up a precise mechanism for possible future tests of other enlistment options through individually randomized assignment in the REQUEST system. The test showed that a substantial number of recruits are willing to commit for two years in the Selected Reserve to obtain an Army College Fund benefit. It also showed that offering the 2 + 2 + 4 option has led relatively few recruits to choose a short term of service in place of a longer term or to move from a combat to a noncombat skill. It is too soon to determine whether the program led to a significant increase in the total number of high-quality recruits entering the Army.

A RAND NOTE

N-3187-A

The 2 + 2 + 4 Recruiting Experiment: Design and Initial Results

Richard Buddin, J. Michael Polich

October 1990

**Prepared for the
United States Army**

RAND

PREFACE

This Note describes the design and first six months of experience for a national experiment on a proposed new recruiting program for the U.S. Army. The program, called the "2+2+4" recruiting option, is one of the tools that the Army believes could help sustain its ability to attract high-quality young people during difficult recruiting periods in the future. The program would expand eligibility for the Army's post-service educational benefit to include recruits entering two-year active-duty tours in selected noncombat occupational specialties, provided that they agree to serve an additional two years in the Selected Reserve.

The Army and the Office of the Secretary of Defense have developed the new program on an experimental basis, and the Congress provided authority to initiate the program as a test, with the stipulation that it will be carefully evaluated. RAND's role is to design the evaluation mechanism, to identify possible program effects, to ensure the statistical integrity of the test, and to lay plans for analysis of the results. This Note sets forth RAND's design for the test as a controlled experiment, similar to earlier enlistment incentive tests, and it presents preliminary tabulations of results during the first six months of the test.¹

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¹See J. Michael Polich, J. N. Dertouzos, and S. James Press, *The Enlistment Bonus Experiment*, The RAND Corporation, R-3353-FMP, 1986; and Richard L. Fernandez, *Enlistment Effects and Policy Implications of the Educational Assistance Test Program*, The RAND Corporation, R-2935-MRAL, 1982.

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SUMMARY

The Army relies on a number of recruiting incentive programs to enhance its ability to attract high-quality enlistees. Prominent among these incentives is the Army College Fund (ACF), a benefit that can be used by the enlistee to support post-service education.¹ To attract more high-quality people during periods of recruiting difficulty, the Army has proposed to expand the ACF to cover certain types of two-year enlistments, under a new option known as the "2+2+4" program. This Note describes the design and interim results of a national experiment to test the effectiveness of that program.

Under the 2+2+4 program, recruits can choose a two-year active-duty tour in selected noncombat occupational specialties, with an additional commitment of two years in the Selected Reserve and approximately four years in the Individual Ready Reserve. The option is aimed at high-quality, college-bound youth and would offer ACF benefits of \$8,000.

PROGRAM FEATURES AND POTENTIAL EFFECTS

In recent years, the Office of the Secretary of Defense (OSD) and the Congress have restricted Army utilization of two-year active-duty tours because these short tours were not deemed cost-effective. Several features of the 2+2+4 program are designed to alleviate previous concerns about cost-effectiveness. First, the option is restricted to specialties with short training times, and recruits are required to serve two years in the active Army *after* completion of basic and Advanced Individual Training. Second, the reserve commitment enhances the return on the active-duty training investment. ACF payments are contingent on reserve participation and program participants must agree to accept a reserve slot in their active duty skill, if one is available in their local area after they leave the active Army. The selection of skills eligible for the program was based on both active and reserve force needs.

The cost-effectiveness of the 2+2+4 option depends on the magnitude of both enlistment and longer-term effects. The experiment was designed to provide evidence on

¹The ACF is an amount added to a service member's fund for post-service education. All service members are eligible to participate in the "GI Bill" educational program, which provides up to \$9,000 in the fund in return for an investment of \$1,200 made by the member during his first year of service. Active-duty recruits who enter designated critical skills and who have qualifying test scores and high school diplomas are also eligible for the ACF, which adds between \$8,000 and \$14,400 to their educational fund, depending on term of service.

the size of these effects. The most likely short-term enlistment effects of the program are as follows:

- *Market expansion.* The Army contends that the 2+2+4 program could expand the market of high-quality youth interested in the Army. The availability of ACF for two-year noncombat specialties might attract new people who would not enlist without the 2+2+4 program.
- *Skill and term-of-service distributions.* The new program may also affect the enlistment choices of individuals who would have enlisted in the absence of the new program. Some recruits who might have chosen a two-year combat job or a longer term of enlistment may shift to the 2+2+4 program.

In the longer term, the above enlistment effects could cause other changes in Army manning and could affect personnel and training costs, primarily in the following ways:

- *Active recruiting and training.* Shorter terms of service may lead to increased active-duty training costs and to larger downstream accession requirements; however, if the 2+2+4 program increases the supply of people willing to join the Army, the net effect could reduce recruiting costs. These effects need to be traced and modeled to determine the long-term static and dynamic effects.
- *Reserve recruiting and training.* The new program should increase the number of people who enter the Selected Reserve after active service. For such "prior-service" personnel, the reserve components will save basic training costs, and they will also save skill training costs to the extent that program participants remain in the same occupation when they enter reserve service.

TEST DESIGN

The effects of the test are being estimated through a two-part test design, including a job-offer experiment and a geographically based experiment.

Job-Offer Experiment

In the job-offer experiment, individual applicants for the Army are being randomly assigned eligibility for the 2+2+4 program through the Army's job reservation system (REQUEST) at the time they discuss enlistment with an Army job counselor. The job-offer portion of the experiment will provide precise estimates of how the 2+2+4 program affects enlistment choices of qualified applicants and how it affects the skill and term-of-service distributions. Because program offers are randomly varied across individuals, this method controls for factors extraneous to the program.

Geographic Experiment

In the second part of the design, matched sets of geographic areas have been assigned to varying programs. This portion of the design is needed to assess whether the 2+2+4 program leads to a market expansion in the number of qualified applicants that reach the job counselor portion of the enlistment process. Such market expansion could occur because of recruiter promotion of the program, or because of the spread of information among prospective recruits. A geographic design makes it possible to detect and analyze such effects.

TEST IMPLEMENTATION AND ANALYSIS PLAN

The design specifies that the test be run for 15 months, long enough to stabilize the program and to accumulate data sufficient to estimate enlistment effects as small as one to three percentage points. At the conclusion of this period, we anticipate being able to assess all of the enlistment effects and to model possible effects on the reserve components based on historical experience with earlier cohorts. To trace the program's actual longer-term effects, however, the Army will need to wait for the experimental cohorts to pass through their active service term and their initial period of reserve service. Annual follow-up of the test cohorts through official records will be necessary to address long-run cost-effectiveness issues, including effects on the Selected Reserve forces.

INTERIM TEST RESULTS

Program Participation

To date, the test program appears to be running smoothly and selling well. Altogether the Army has written 2,705 nonprior service enlistment contracts under the 2+2+4 program during the first six months of the experiment. This contract rate is consistent

with the program goal of 5,000 annually. It represents 4 percent of the 61,780 nonprior service contracts written by the Army during this period, but 8 percent of contracts for high-quality personnel.

Within the eligible skills, the 2+2+4 program represents a considerable number of enlistees. Overall, 16 percent of the seats in eligible skills are being filled by program participants, and 30 percent of the high-quality contracts in these skills are in the 2+2+4 program. Within the 19 Military Occupational Specialties eligible for the program, participation rates for high-quality personnel typically range between 20 and 40 percent. The strong overall sales rate has been consistent for each month of the test.

At this stage in the experiment, only some of the possible effects can be examined with a reasonable degree of precision. From the job-offer portion of the test, we can examine *distribution* effects on term of service and skill selection with some confidence. From the geographic portion of the test, we can examine possible *market expansion* effects, but the geographic comparisons are only suggestive at this point.

Term of Service and Skill Distribution

The job-offer portion of the experiment provides the best evidence currently available, because it has produced data on a large number of individual enlistees who were randomly assigned to eligibility or ineligibility. Even at this early stage of the test, the job-offer data provide fairly reliable estimates of the "buy-down" effects on term of service and the "buy-over" effects from combat to noncombat skills. These results are important because they shed light on two possible effects that are often viewed as risks of the program and that should be minimized if the program is to attain success.

The job-offer experiment results to date suggest that the 2+2+4 program is not resulting in a major shift away from longer terms of service or from combat occupations. Comparing persons eligible for the program with those who were not eligible, we found that the fraction enlisting for four or more years remained virtually the same (63 percent), whereas the fraction enlisting for only two years was slightly higher in the eligible group (20 vs. 17 percent). Similarly, the fraction enlisting in noncombat skills was slightly higher in the eligible group than in the ineligible group (35 vs. 33 percent). Thus, the program does not appear to have caused a large exodus from longer terms of service or from the combat skills.

Market Expansion

To assess market expansion effects, we must turn to the geographic test cells. Here the results are much more preliminary, because the sample sizes are smaller and because the most sensitive estimates will require multivariate analyses involving additional data that are not yet available (e.g., unemployment rates from the Bureau of Labor Statistics). Nonetheless, we have made some simple comparisons of areas where the program is available, contrasted with control areas where it has been withheld. These comparisons indicate that the program areas have outperformed the control areas by 3 to 5 percent in producing high-quality enlistments. However, this result is not statistically significant in the current database, in part because the data set is still small, which means that our comparisons lack precision. A more reliable estimate of the market expansion effect will be available in the future, but it must wait until we accumulate more months of data and we can conduct the more comprehensive multivariate analysis.

CONCLUSIONS

To date, the test has accomplished several objectives. First, it has established a framework for systematic assessment of the 2+2+4 program, and it has set up a precise mechanism for possible future tests of other enlistment options through individually randomized assignment in the REQUEST system. The mechanism is working smoothly and is providing data on a quick-turnaround basis. Second, the test has shown, so far, that a substantial number of recruits are willing to commit for two years in the Selected Reserve in order to obtain an ACF benefit. Third, it has shown that offering the 2+2+4 option has led relatively few recruits to choose a short term of service in place of a longer term, or to move from a combat to a noncombat skill. What we cannot yet say is whether the program has led to a significant increase in the total number of high-quality recruits entering the Army. Although the present data suggest such an effect may be occurring, it is too soon to identify it with confidence, and it is too soon to assess the ultimate effect of the program on the Army's reserve components. These issues will be addressed in future reports.

CONTENTS

PREFACE	iii
SUMMARY	v
FIGURES and TABLES	xiii
Section	
I. BACKGROUND	1
Origin of the Test	1
Program Features	2
Potential Program Effects	5
II. EXPERIMENTAL DESIGN	7
Job-Offer Experiment	8
Geographic Experiment	10
III. ENLISTMENT PATTERNS DURING FIRST SIX MONTHS OF THE EXPERIMENT	16
Scope of Program	16
Enlistment Patterns by Term of Service and Skill	19
Trends in Total High-Quality Enlistments	21
IV. COST-EFFECTIVENESS AND LONGER-TERM EFFECTS	23
Assessment Method	23
Relevant Factors for Analysis	24
V. CONCLUSIONS	27
Appendix: INITIAL SKILLS ELIGIBLE FOR 2+2+4 TEST	29

FIGURES

1. Enlistment Process and Test Elements	7
2. Job-Offer Process	9
3. Recruiting and Application Process	11

TABLES

1. ACF Choices Facing Applicants	4
2. Geographic Test Cells	13
3. Allocation of Battalions to Test Cells	14
4. Characteristics of Balanced Test Cells in 1988 Base Period	15
5. Distribution of Enlistment Contracts During First Six Months of ACF-Plus Enlistment Program	17
6. 2+2+4 Contracts in Eligible Skills from July through December 1989	18
7. 2+2+4 Program Sales by Month	19
8. Distribution by Term of Service: Evidence from the Job-Offer Experiment (Cell C)	20
9. Distribution by Skill: Evidence from the Job-Offer Experiment (Cell C) ...	20
10. Market Expansion Evidence: Geographic Cell Comparisons	21
11. Market Expansion: Comparisons Using Other Base Periods	22

I. BACKGROUND

This Note describes the design and initial enlistment effects of a national experiment for a proposed new recruiting program for the U.S. Army. The program, called the "2+2+4" or "ACF-Plus" recruiting option, is one of the tools that the Army believes could help meet its recruiting goals for high-quality personnel. The program would expand eligibility for the Army College Fund (ACF)¹ to include recruits entering two-year active-duty tours in selected noncombat occupational specialties, provided that they agree to serve an additional two years in the Selected Reserve.

The experiment was authorized by the Congress in the summer of 1989. This report covers the first six months of the experiment, from July through December 1989; the experiment is expected to continue for a total of 15 months. At this point in the experiment, we describe participation in the program and provide tentative estimates of its enlistment effects. More reliable estimates will require a longer period of observation. The ultimate success of the program will also depend on the longer-term effects of the program on training and recruiting in the active and reserve forces. The present report, however, does not attempt to examine these longer-term effects, since they can be assessed only by tracing program participants through their two-year active-duty term and subsequent reenlistment and/or reserve service.

ORIGIN OF THE TEST

The Army believes that the combination of a large educational benefit and a two-year term for noncombat skills would significantly improve its recruiting posture. In the late 1980s, however, Congress prohibited the payment of special educational benefits to two-year recruits, except in the case of combat skills.² The restriction was based on a perception

¹The ACF is an amount added to a service member's fund for post-service education. All service members are eligible to participate in the "GI Bill" educational program, which provides up to \$9,000 in the fund in return for an investment of \$1,200 made by the member during his first year of service. Active-duty recruits who enter designated critical skills and who have qualifying test scores and high school diplomas are also eligible for the ACF, which adds between \$8,000 and \$14,400 to their educational fund, depending on term of service.

²Action by the House Appropriations Committee in 1988 prohibited the payment of ACF benefits to two-year recruits in noncombat skills. Before that time, the Department of Defense had the option of permitting such benefits, which had been offered in earlier years.

that short terms of enlistment are likely to yield less value to the government (e.g., fewer trained man-years) than longer terms.

The issue gained currency in early 1989, when the Army began to encounter increasing difficulties in recruiting. This situation prompted renewed concern within the Army and Office of the Secretary of Defense (OSD) that some form of ACF benefits for noncombat skills should be reinstated. As a result, the Assistant Secretary of Defense for Force Management and Personnel wrote to the chairmen of the House and Senate Appropriations Committees, requesting legal authority to begin a new two-year, noncombat ACF program on a test basis. OSD assured the committees that the test would be carefully limited and structured to address issues of cost-effectiveness. At the request of the Army and OSD, RAND designed the test and agreed to take a lead role in evaluating its results. In mid-1989, the design was approved and the Congress enacted legislation permitting a 15-month test of the special program. This report documents the details of the test design, the methodology that RAND has developed, and the initial enlistment analysis for the first six months of the experiment.

PROGRAM FEATURES

Previous RAND analysis suggested a number of conditions that would contribute to the cost-effectiveness of a two-year active-duty term. The key parameters in that analysis were (1) the extent to which the two-year option expanded the recruiting market (i.e., brought in new recruits who otherwise would not have enlisted); (2) the cost of active-duty training for two-year enlistees; and (3) the extent to which the two-year active enlistment program increased the input of trained personnel into the Selected Reserve. That analysis suggested that the two-year program could be cost-effective, relative to alternative recruiting programs, provided that it expanded the enlistment market, was restricted to skills with moderate training times and costs, and was structured to encourage people to enter the Selected Reserve after their two-year term of active service.

The Army considered these features when it subsequently designed the 2+2+4 program. Under the new program, a recruit is offered an ACF benefit for enlisting in a noncombat skill, if he commits to three conditions:

- Two years of service, plus training time, in the active Army;

- Two additional years of service in the Selected Reserve; and
- The remainder of his eight-year legal obligation in the Individual Ready Reserve (IRR).³

The program requires commitments that are more favorable to the Army than earlier two-year enlistment programs. First, its provisions require that the enlistee serve an active-duty term slightly longer than the nominal two years; the term is two years after completion of basic training and Advanced Individual Training (AIT). The training time ranges from four to five months. Second, the reserve commitment would sharply increase the number of two-year personnel entering the Selected Reserve.⁴ Historical data suggest that under present programs about 30 percent of a two-year active-duty cohort will enter the Selected Reserve, and that rate should be much higher under the 2+2+4 program.⁵

The Army has placed a number of conditions and limits on this program, which are intended to target it where needed and to improve its potential for cost-effectiveness. The main conditions are as follows:

- *Number of seats.* The number of 2+2+4 contracts will be limited to an annual total of 5,000 seats.
- *High-quality personnel.* Like other educational incentives, the program will be offered only to "high-quality" recruits, that is, high school graduates with Armed Forces Qualification Test (AFQT) scores at or above the 50th percentile.
- *Eligible skills.* Also like other incentives, the program will be limited to specified Military Occupational Specialties (MOS), selected by the Army to

³The Selected Reserve includes the U.S. Army Reserve and the Army National Guard. Members of the Selected Reserve meet with their units regularly for drills (normally one weekend per month) and attend a two-week annual training period at an active training facility. All enlistees begin service with an eight-year obligation; that part of their eight-year period which is not served on active duty or in the Selected Reserve is automatically served in the IRR.

⁴The Army plans to require reserve service as a condition for making ACF payments to 2+2+4 program participants.

⁵It would be desirable to obtain an even longer Selected Reserve commitment, if feasible. The test strategy is to begin with a program that requires only a moderate-length commitment (two years), because of the possibility that a reserve requirement may limit market expansion. Later, if significant enlistment effects are observed under the 2+2+4 program, the Army will experiment with longer reserve commitments (e.g., 2+3 or 2+4).

meet criteria consonant with criteria that RAND had suggested in an earlier preliminary analysis: (a) eligible skills have lower-than-average rates of "fill" of high-quality people relative to the Army's goal; (b) AIT training time must be no longer than 14 weeks; and (c) vacancies in the skill must be widely distributed in reserve units across the country.⁶

- *Reserve skill commitment.* The recruit must agree, in the enlistment contract, to accept a reserve slot in his active skill, if one is available within a reasonable commuting distance after he leaves the active Army. This provision should increase the reserve components' ability to profit from active-duty skill training.

Of course, the two-year noncombat program is only one of a number of job-related choices that may enter into a military applicant's enlistment decision. Table 1 displays the ACF-related options for a recruit considering a skill eligible for the ACF benefit. The choices available in the baseline, or pre-test condition, are shown in the top panel of the table. Under the baseline program, the recruit can choose a combat skill and receive the regular ACF amounts: \$14,400 for a four-year term, \$12,000 for a three-year term, or

Table 1

ACF CHOICES FACING APPLICANTS
(Amounts in addition to "GI Bill")

Term of Service	Program-Eligible Skills	
	Combat	Noncombat
4 years	\$14,400	\$14,400
3 years	12,000	12,000
2 years	8,000	0
2 years (2+2+4 program)		8,000 ^a

^aTo receive ACF benefit in a noncombat skill, the recruit must accept a two-year additional reserve commitment.

⁶See the appendix for the initial list of skills, which cover signal and communications, maintenance, construction, and supply, service, and medical.

\$8,000 for a two-year term. In addition, the same recruit can choose a noncombat skill for a four-year or three-year term, in which case he receives the corresponding ACF benefit; or he can select a two-year term in a noncombat skill and receive no ACF.

The impact of the new 2+2+4 program would be to enlarge this decision set to include an additional option, as shown in the lower panel of Table 1. Under the new program, a recruit could also choose to enlist for two years *and* to commit to the additional two years in the Selected Reserve, in which case he would receive an ACF benefit of \$8,000. Note that he may still decide to enlist for two years without making a reserve commitment, in which case he receives no ACF. Thus, the program changes only one of many choices that recruits may consider. It is also important to note that the program preserves a distinction between combat and noncombat skills, since the two-year ACF is available for combat jobs even without the reserve commitment.

POTENTIAL PROGRAM EFFECTS

The issues surrounding this program, and the two-year option in general, grow out of uncertainty about its possible effects. A number of plausible effects have been suggested by program advocates and critics. They fall into two categories: immediate effects on enlistments and longer-term effects.

Immediate Enlistment Effects

Market expansion. The program may expand the market—it may increase the total number of high-quality young people who enlist or apply for enlistment in the Army. This is the principal benefit expected by program advocates in the Army, who argue that the combination of a short term and a college benefit is likely to appeal uniquely to a college-bound subgroup in the recruiting market.

Skill and term-of-service distributions. The program may also affect the *distribution* of enlistments by skill and term of service. It may, for instance, induce some people who would otherwise enlist for longer terms to sign up for a two-year term instead, thus reducing the man-years committed. It may also affect the rate of fill for the noncombat specialties vis-a-vis the combat specialties. There is precedent for all such effects, since we were able to observe them in previous experiments on educational benefits and enlistment bonuses.

Longer-Term Effects

Active recruiting and training. Short periods of enlistment, as we showed in our earlier analysis of the two-year option, may affect the active force personnel system in complex ways. When personnel enlist for shorter terms, the average number of man-years per recruit declines, increasing throughput and training costs. (The extent of these changes depends on a number of other parameters such as attrition and reenlistment rates.) However, the availability of a short term also induces some additional people to enlist; such a market expansion effect may reduce the investments required in other recruiting resources. With currently available data, the magnitudes of these various effects and costs cannot be assessed with a reasonable degree of precision, primarily because we lack credible data on the size of the market expansion effect. The experiment, however, will yield such data.

Reserve training and recruiting. In addition to its effects on the active forces, a two-year tour, especially when combined with the provisions in this program, is likely to have downstream effects on the number of active soldiers who transition into the reserve components and on the mix of trained people who are available to the Selected Reserves. Both of these latter effects would increase the number of reserve man-years that the Army obtains under the program, thus saving recruiting and training costs. The magnitude of the cost savings could be heavily influenced by the extent to which reservists serve in their active skill. These parameters and costs cannot be readily assessed with currently available data.

We have constructed and implemented a controlled experiment to sort out the possible effects of the 2+2+4 recruiting option. The experiment is designed to control or randomize out extraneous influences by offering different programs to equivalent groups of individuals. This approach makes it possible to isolate the true effects of the 2+2+4 program. Below we describe the details of our experimental design and report patterns of enlistments during the first six months of the experiment.

II. EXPERIMENTAL DESIGN

The enlistment process involves several stages, and a comprehensive test design must measure effects at different points in the process, as depicted in Fig. 1. Because the 2+2+4 program is available only to high-quality recruits in a select number of noncombat occupations, important program effects are likely to occur relatively late in the enlistment process when recruits meet with an Army job counselor to discuss specific offers and options. Therefore, a key element of the test design is a *job-offer experiment* that randomly assigns qualified Army applicants to varying program conditions. This portion of the design will provide estimates of how eligibility for the 2+2+4 program affects enlistment, skill, and term-of-service decisions.

However, the job-offer experiment cannot capture the full effects of the program if the program expands the market of qualified applicants meeting with job counselors. A new recruiting incentive could potentially generate market expansion in several ways. The availability of the 2+2+4 program *could* increase recruiter contacts with prospects because

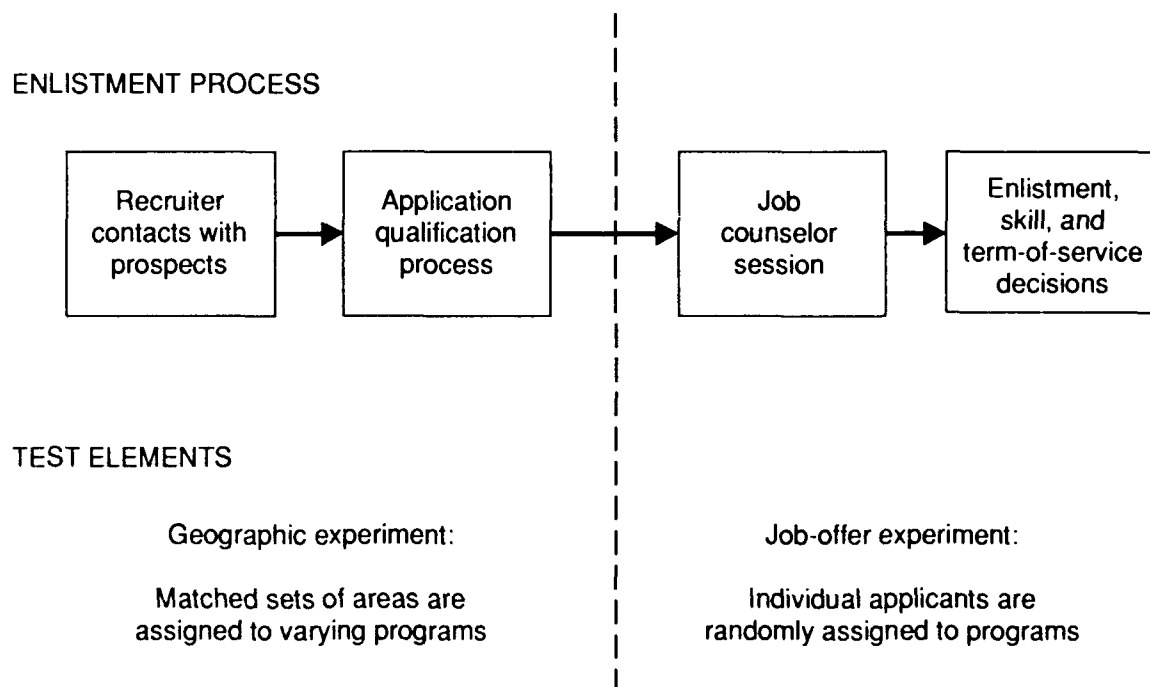


Fig. 1—Enlistment process and test elements

the program generates either more interest in the Army or interest among a new subset of the target population. The program might also increase the number of applicants because more contacts are interested in pursuing their options. Finally, the program could increase the likelihood that some partially eligible applicants stay in the system, satisfy their eligibility problems, and talk with the job counselor. The 2+2+4 program might be a recruiting success if it increased the number of qualified applicants meeting a job counselor, even if the enlistment rate of these qualified applicants was unaffected.

To assess whether the test program leads to a market expansion prior to the job counselor interview, we employ a *geographic experiment*. Under the geographic plan, matched sets of areas are assigned to different program cells. Analysts can then compare the numbers of qualified applicants reaching the job counselor session (and the number of enlistments) in test and control areas.

This test design is more complicated than those previously employed in recruiting experiments, because the extent of the program intervention is modest. Both the Educational Benefits Test and the Enlistment Bonus Test were more widely available than the proposed test of the 2+2+4 program.¹ Also, the effects are concentrated on a group of people who are making a specific term-of-service choice. The two-part design provides systematic and precise estimates of how and where the program intervention is affecting the enlistment process. There may be only a small pre-counselor market expansion if contacts generally receive little information about specific Army jobs and enlistment options before Armed Services Vocational Aptitude Battery (ASVAB) testing and the job counselor meeting. The 2+2+4 test is designed to detect even modest changes in these different phases of the enlistment process.

JOB-OFFER EXPERIMENT

In the job-offer portion of the test design, individuals are randomly assigned eligibility for the 2+2+4 program through the Army's computerized job assignment system. Figure 2 illustrates the events and types of choices that recruits make during the job-offer process. Qualified Army applicants meet with job counselors and review specific job offers available for their skills and desired accession date. By Army policy, recruiters are

¹See J. M. Polich, J. N. Dertouzos, and S. James Press, *The Enlistment Bonus Experiment*, The RAND Corporation, R-3353-FMP, 1986; and Richard L. Fernandez, *Enlistment Effects and Policy Implications of the Educational Assistance Test Program*, The RAND Corporation, R-2935-MRAL, 1982.

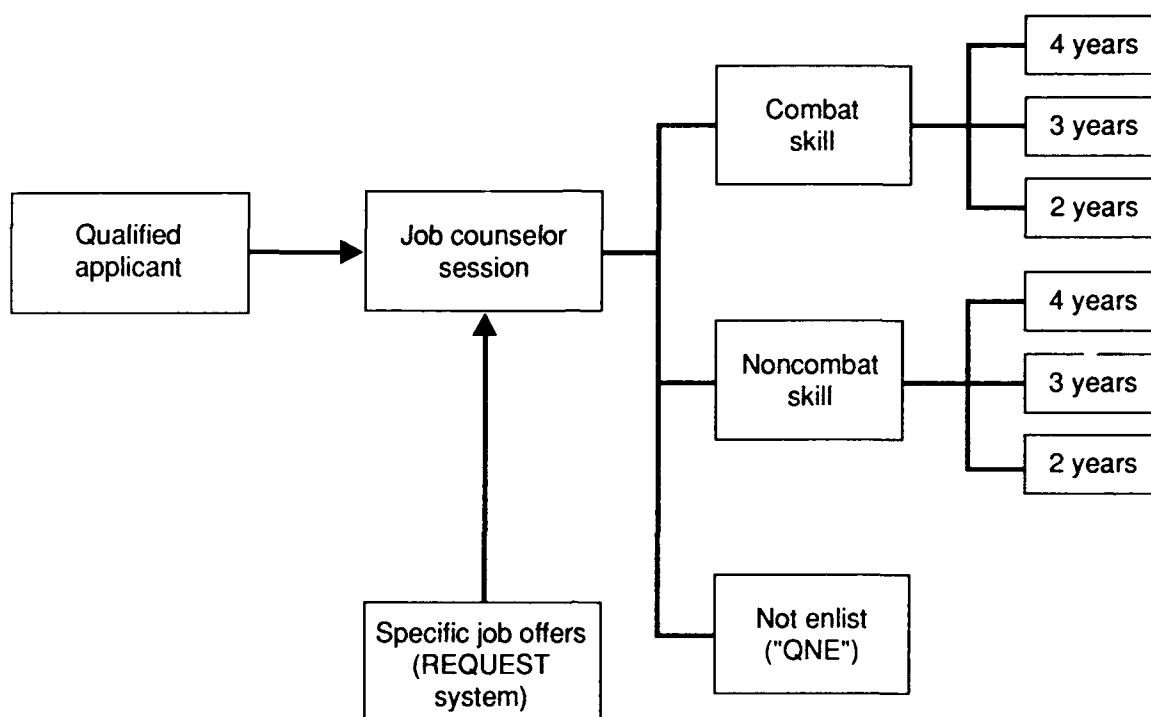


Fig. 2—Job-offer process

encouraged to sell prospects on “the Army,” leaving discussion of specific military jobs and incentives to the job counselor. The policy is reinforced by the fact that recruiters do not always know whether a recruit is eligible for specific jobs and options. At the job counselor session, the counselor presents the applicant with specific information on his eligibility for various skills and available enlistment incentives. The specific job offers are automated into a training seat reservation program, the REQUEST system. After reviewing available job offers, the individual chooses to enlist or to not enlist. Enlistees must also select a specific military job and a term of enlistment. Incentives such as ACF, bonuses, station of choice, and term length are used as inducements to encourage marginal enlistments and to channel applicants into hard-to-fill specialties.

Our design calls for individual recruits to be randomly assigned to either the test or the control condition. The 2+2+4 program offer is available to 70 percent of the qualified recruits meeting with a job counselor; the remaining 30 percent are the control group, for whom the 2+2+4 program option is unavailable. Individuals in the test condition are able to choose the 2+2+4 option for any available noncombat job eligible for the program. Individuals in the control condition can choose enlistment in 2+2+4 eligible occupations with

standard term-of-service options, or they can choose a two-year term without the ACF, but they cannot choose the two-year option with ACF in exchange for the additional obligation of two years in the Selected Reserve.

The job-offer experiment has a number of methodological advantages worthy of note. It provides explicit control of the job-offer process through the computer screen displays for each applicant. The program is randomly varied across individuals, so factors extraneous to the program are balanced across program offerings. An unexpected change in youth unemployment, for example, might make it more likely that individuals in a geographic area would enlist under several enlistment options. The job counselor experiment will provide estimates of the specific drawing power of the 2+2+4 program relative to other programs while holding such factors constant.

In addition, the presence of individual variation across thousands of qualified Army applicants will yield accurate estimates of program effects, including changes in the conversion rate of qualified applicants to contracts and substitution effects on skill and term-of-service distributions. The test will measure the "buy-down" effect of recruits switching from longer terms of service to the 2+2+4 program. The results will also show what share of the 2+2+4 participants are substituting into eligible skills from two-year combat as well as other combat and noncombat enlistments.

The job-offer experiment represents a methodological advance over previous approaches for analyzing enlistment incentive effects. Previous studies, based on comparisons of geographic test areas, have been limited in terms of numbers of observations and ability to control for other covariates that could affect enlistment rates. Job-offer intervention alleviates many of these problems and allows precise estimates of a broader range of enlistment incentives than have been evaluated in the past. It may also prove to be a straightforward tool for testing other kinds of programs, and thus it might be useful in resolution of future military enlistment policy issues.

GEOGRAPHIC EXPERIMENT

The design calls for geographic variation in program offers, to determine whether full implementation of the 2+2+4 program would also expand the pool of qualified applicants reaching the job counselor session. The nature of the market expansion depends on where and how the 2+2+4 program affects the enlistment decisionmaking process. Figure 3 depicts the principal factors in the early part of the process, where much of a market expansion effect might be expected to occur. A geographic-based design is the most feasible way of building systematic program variation into the early stages of the enlistment process.

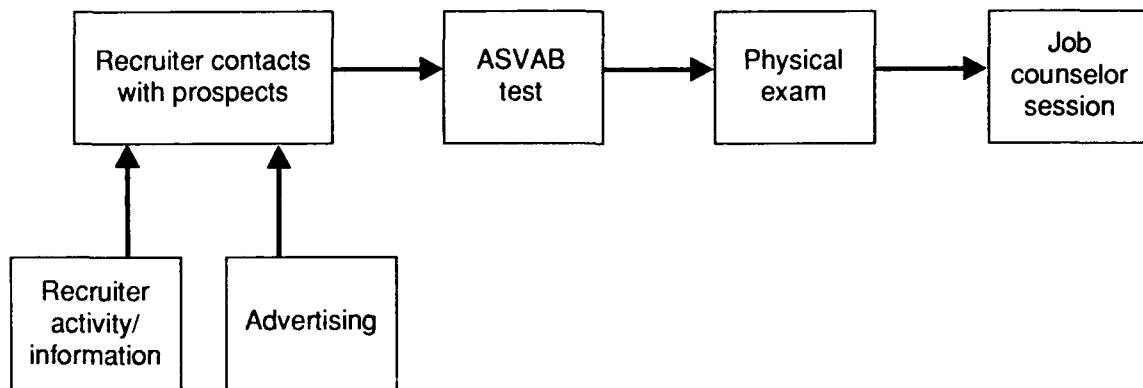


Fig. 3—Recruiting and application process

Hypotheses About Market Expansion

The experimental design allows an evaluation of various mechanisms that could plausibly affect the supply of qualified applicants that reaches the job counselor. During our observations of recruiting and discussions with people familiar with the process, we heard several alternative hypotheses about how the 2+2+4 program might affect the process:

- *Partial implementation.* Randomly assigned program eligibility under the job-offer experiment could increase the flow of persons through the process, because even limited program availability may facilitate recruiter canvassing and promotion. Thus, recruiters might actively promote the program even though it would ultimately be available only to a subset of high-quality recruits.
- *Full implementation.* If the program were actually adopted as policy, it would be consistently available to every qualified person. Some people would argue that such consistent implementation of the program could produce a larger market expansion than under the random job-offer scenario, because the recruiters might more actively “sell” a program that is available to all high-

quality recruits. A consistent implementation might also increase the tendency for recruiting prospects to spread program information to others considering enlistment; this might further increase the market expansion effect.

- *Limited job information available.* Alternatively, some observers claim that the majority of enlistment prospects have no detailed information about Army jobs and options before reaching the job counselor. Under this scenario, the program would result in little or no market expansion at the front end of the enlistment process (although the contracting rate could still be enhanced by increasing the fraction of qualified applicants who enlist).

Test Cells

These competing hypotheses on the nature of the market expansion are tested through an experimental design where the program offering is varied across areas. The design varies program availability across three geographically defined test cells, as shown in Table 2:

- Cell A is a control cell (the program is unavailable) and covers 20 percent of the nation's youth population.
- Cell B is a full-program implementation (the program is available to all qualified applicants) and also covers 20 percent of the youth population.
- Cell C is a partial-program implementation and covers the remaining 60 percent of the population. The job-offer experiment is in effect, with the 2+2+4 option offered to randomly selected, qualified applicants. The program is available for 70 percent of these applicants and unavailable for the remainder.

Regardless of test cell, eligibility for 2+2+4 in no way affects what jobs were available to prospective recruits or their priority in the REQUEST system. Qualified applicants who are eligible for the program have the additional option of choosing the 2+2+4 program if they enter a participating Army job.

This design permits estimation of market expansion effects by comparing the application and contract rates across test cell areas. A comparison of application rates in cells A and C will show whether even partial implementation of the program increases the size of the market early in the recruiting process. A comparison of application rates in cells B and C will show whether full, consistent program implementation would expand the market further than partial implementation. Finally, a comparison of applications and

Table 2

GEOGRAPHIC TEST CELLS

Cell	Program Availability	Percent of U.S. Population
A	Not available	20
B	Available to all qualified individuals	20
C	Offered to randomly selected, qualified individuals (by job counselor)	60

contracts in cells A and B will show the market expansion effect of a full program relative to the status quo.

Area Allocation and Analysis

The geographic portion of the experiment is based on a randomized assignment of dispersed sets of areas to the three test cells. The assignment algorithm resembles that employed previously in the Education: Benefits Test and the Enlistment Bonus Test. The test areas, defined by the 53 Army Recruiting Battalions in the Continental United States, are balanced on a variety of factors such as (1) previous high-quality enlistment rates, (2) recruiting goals, (3) number of Army production recruiters, (4) civilian unemployment and wage rates, and (5) population demographic characteristics such as minority composition. In addition, the balancing ensures that each test cell is composed of a dispersed set of areas, including, for instance, some areas from different regions of the country. Balancing on these factors ensures that some test cells are not dominated by unusually successful or unsuccessful recruiting districts. Without balancing across battalions, a market expansion coincident with the implementation of the 2+2+4 program could be inappropriately attributed to the program when the expansion was actually due to a regional attribute such as youth employment opportunities. Table 3 shows the allocation of Army recruiting battalions to test cells, and Table 4 shows the values of balancing variables across test cells during the pre-test base year of 1988.

Table 3

ALLOCATION OF BATTALIONS TO TEST CELLS

Cell A: Control Cell with 2+2+4 Program Unavailable			
1H Newburgh	1N Syracuse	3H Montgomery	3K Richmond
4D Denver	4G Kansas City	5C Cleveland	5H Indianapolis
6G Phoenix	6J Salt Lake City		
Cell B: 2+2+4 Program Available to All Qualified Recruits			
1E Harrisburg	1G New York City	3G Miami	3J Raleigh
4C Dallas	4J Oklahoma City	5J Milwaukee	5K Minneapolis
6A San Francisco	6F Los Angeles		
Cell C: 2+2+4 Counselor Experiment with Random Program Offering			
1A Albany	1B Baltimore	1C Boston	1D Brunswick
1F New Haven	1K Philadelphia	1L Pittsburgh	3A Atlanta
3B Beckley	3C Charlotte	3D Columbia	3E Jacksonville
3F Louisville	3I Nashville	4A Albuquerque	4E Houston
4F Jackson	4H Little Rock	4I New Orleans	4K San Antonio
4N St. Louis	5A Chicago	5B Cincinnati	5D Columbus
5E Des Moines	5F Detroit	5I Lansing	5L Omaha
5M Peoria	6H Portland	6I Sacramento	6K Santa Ana
6L Seattle			

NOTE: The 2+2+4 program is unavailable in San Juan (3L) and Honolulu (6E), but these battalions are not considered part of the test.

The geographic experiment can be analyzed using methods similar to those applied in previous enlistment supply experiments.² Thus, applicant and contract counts will be collected by month and by battalion throughout the experiment. Within each test cell and each battalion, analysts can compare the number of applications and contracts during the base period before program implementation with the numbers during the test. If the program leads to market expansion, then the ratio of test-period to base-period applications should be greater in cells B and C than in the control cell A. This analysis approach will adjust for overall changes in enlistment behavior by comparing changes in applications and contracts in the test cells with those in the control cell.

²For a detailed discussion of the statistical model for analyzing enlistment counts and their standard errors, see Gus W. Haggstrom, Thomas J. Blaschke, Winston Chow, and William Lisowski, *The Multiple Option Recruiting Experiment*, The RAND Corporation, R-2671-MRAL, 1981.

Table 4

CHARACTERISTICS OF BALANCED TEST CELLS IN 1988 BASE PERIOD

Variable	Cell A	Cell B	Cell C	Overall
Percent of nation's high-quality qualified military available (QMA) population	20.97	21.41	58.58	100.00
Unemployment percentage	5.42	5.33	5.90	5.69
Wage rate	10.23	10.26	10.42	10.38
Per capita income	10168	10739	10249	10353
Percent nonwhite	14.94	19.74	16.98	17.13
Percent high-quality QMA in northeast	24	21	24	24
Percent high-quality QMA in southeast	14	12	17	15
Percent high-quality QMA in southwest	22	18	17	18
Percent high-quality QMA in midwest	23	25	27	26
Percent high-quality QMA in west	17	24	15	17
Recruiters per high-quality QMA	.49	.48	.50	0.49
High-quality female enlistment rate (%)	.95	0.94	.99	0.97
High-quality male enlistment rate (%)	5.06	5.03	5.25	5.17
High-quality concentration	23.90	21.39	21.74	21.88
High-quality mission per high-quality QMA	2.85	2.82	2.92	2.90
Local advertising per high-quality QMA	2.35	1.81	3.01	2.68
Percent high-quality contracts in noncombat jobs	69.03	68.51	69.09	68.99
Percent fill of Troup Program Unit (TPU) wartime strength requirement	88.97	92.15	93.16	92.51
Percent high-quality contracts in four-year contracts	72.78	71.03	73.02	

III. ENLISTMENT PATTERNS DURING FIRST SIX MONTHS OF THE EXPERIMENT

At this stage of the experiment, we can make certain preliminary assessments of how the program is affecting the number of high-quality enlistments and the distribution of enlistments by term of service and skill area. However, we stress that observed "effects" are measured imprecisely at this early stage because the sample sizes are still small (especially for specific subgroups). As the experiment continues, we will build up additional observations from consecutive months of testing, which will increase the precision of the estimates. In addition, the complete test analysis will include multivariate models controlling for such factors such as local economic conditions, recruiter missions and behaviors, advertising expenditures, and seasonal effects that may vary systematically across test cells.¹ Such multivariate analyses are particularly important for estimating the market expansion effect correctly. At this point, there are insufficient data to support a multivariate analysis, so our current estimates rely on rough tabulations.

SCOPE OF PROGRAM

The 2+2+4 program appears to have been well received, and it is selling briskly in the test cells. The Army wrote 2,705 nonprior service enlistment contracts under the 2+2+4 program during the first six months of the experiment.² These sales rates are consistent with the annual target of 5,000 seats.

Table 5 provides an overview of Army contracts during the first six months of the program. The table reflects the choices that recruits make from among the enlistment options available to them. ACF benefits and term of service opportunities vary with MOS, so that many choices reflect compromises. For example, popular MOSs may not offer short enlistment terms or ACF benefits, so recruits who are interested in these skills must evaluate whether they are willing to accept a second-choice skill to obtain other benefits.³

¹The test design was balanced so that differences in these characteristics would be minimized. The multivariate analysis is needed to adjust for changes in these factors during the course of the experiment.

²All enlistment counts in this section refer to nonprior service enlistments, because prior service enlistees are ineligible for the 2+2+4 program.

³The basic "GI Bill" benefit of \$9,000 is available to all recruits who contribute \$1,200 during their first year of service. The Army offers supplemental ACF money for hard-to-fill skills.

Table 5

DISTRIBUTION OF ENLISTMENT CONTRACTS DURING FIRST
SIX MONTHS OF ACF-PLUS ENLISTMENT PROGRAM

Contract Type	Number of Contracts	Term of Service (Percent)				
		2	3	4	5	6
<i>Combat</i>	21,975	14	26	59	0	0
High-quality with ACF	5,683	52	35	13	0	0
High-quality without ACF	6,337	1	15	82	0	1
Low-quality	9,955	0	29	71	0	0
<i>Noncombat</i>	39,805	10	15	58	10	7
High-quality with ACF	7,644	35	37	28	0	0
High-quality without ACF	15,641	8	2	56	19	15
Low-quality	16,520	0	18	73	6	2

The scale of the 2+2+4 program can be gauged roughly in a number of ways, depending on the comparison group. For example, the 2+2+4 program comprised 4 percent of the 61,780 nonprior service contracts written during this period, but 8 percent of the high-quality contracts. Among high-quality noncombat recruits, the program constituted 12 percent of contracts and 35 percent of those choosing ACF. Thus, in the context of all Army recruiting, the program is a small one, but it affects the choices for a significant number of enlistees entering the noncombat skills.

Table 6 describes the contribution of the program to specific program eligible skills. Overall, about 16 percent of the seats in eligible skills are being filled by program participants, and 30 percent of the high-quality contracts in these jobs are in the 2+2+4 program. The program's share of high-quality participants varies considerably across MOSs from over 40 percent for unit communications maintainer (31V), telecommunications operator (72E), and combat medic (91A) to less than 20 percent for six of the MOSs.⁴

⁴Three construction skills were deleted from the list of program eligible MOSs in November, because contract levels in these skills were unexpectedly high. Carpenter/Mason, Crane Operator, and Construction Equipment Operator were replaced in the program by Chemical Operations Specialist, Track Vehicle Repairer, and Material Storage and Handling Specialist. These new MOSs satisfy the initial selection criteria for the program by having below average fill rates in the active Army, short training times, and reserve component vacancies spread across the country.

Table 6

2+2+4 CONTRACTS IN ELIGIBLE SKILLS
FROM JULY THROUGH DECEMBER 1989

MOS	Description	Number of 2+2+4 Contracts	Percent of Contracts	Percent of High-Quality Contracts
31C	Single Channel Radio Operator	223	23.3	27.2
31K	Combat Signaler	73	8.4	17.4
31L	Wire Systems Installer	58	13.8	27.6
31V	Unit Communications Maintainer	231	29.3	45.6
51B	Carpenter/Mason ^a	50	18.1	38.5
52D	Power Generator Repairer	67	10.5	19.5
54B	Chemical Operations Specialist ^b	17	10.6	17.3
55B	Ammunition Specialist	46	8.7	20.7
62B	Construction Equipment Repairer	37	12.4	34.5
63B	Light Wheel Vehicle Mechanic	12	14.8	35.2
63H	Track Vehicle Repairer ^b	26	15.9	31.3
63J	Chemical Equipment Repairer	183	8.3	20.7
63S	Heavy Wheel Vehicle Mechanic	24	12.5	30.7
62F	Crane Operator ^a	3	5.2	17.6
62J	Construction Equipment Operator ^a	75	9.5	18.8
72E	Telecommunications Operator	135	31.0	47.7
76C	Equipment Records & Parts Spec.	89	12.9	23.6
76V	Material Storage & Handling Spec. ^b	22	7.7	23.1
76Y	Unit Supply Specialist	259	15.6	27.5
77F	Petroleum Supply Specialist	63	7.9	21.8
88M	Motor Transport Operator	149	7.2	19.5
91A	Combat Medic	863	28.1	42.3
Overall		2705	15.6	29.6

^aMOS was dropped from 2+2+4 eligible group on November 6, 1989. Enlistment counts reflect only period of 2+2+4 eligibility.

^bMOS was added to 2+2+4 eligible group on November 6, 1989. Enlistment counts reflect only period of 2+2+4 eligibility.

The level of program sales per month has varied somewhat since the inception of the test, but this largely reflects seasonal differences in Army enlistments. Table 7 shows that program sales have ranged from 9.5 percent of noncombat high-quality contracts in July to 13.9 percent in November. December was a slow month for the program, but it was also a relatively slow month for Army recruiting.

Table 7

2+2+4 PROGRAM SALES BY MONTH

Month	Number of 2+2+4 Contracts	Percent of Noncombat High-Quality Contracts
July	371	9.5
August	488	11.4
September	443	11.3
October	548	12.9
November	532	13.9
December	323	10.4

In broad terms, the experiment is running smoothly at this point. The 2+2+4 program is selling well across a broad range of eligible skills. Program sales have been consistently strong for each month of the test, but they remain within the bounds anticipated for the experiment.

ENLISTMENT PATTERNS BY TERM OF SERVICE AND SKILL

The job-offer experiment provides evidence on how the 2+2+4 program is affecting term of service and occupational choices. Within cell C, recruits are randomly offered the experimental option. The job-offer portion of the test is a specialized experiment (cell C within the overall experiment), where the behavior of 70 percent of recruits eligible for the 2+2+4 option can be compared with the behavior of a 30 percent control cell. In the first six months of the test, about 19,000 high-quality recruits signed Army enlistment contracts in cell C. This constitutes a fairly large sample, and because each individual is randomly assigned to one of the two test groups, the comparisons between the groups are quite precise. Thus, even at this early stage of the test, the job-offer experiment provides fairly reliable estimates of the "buy-down" effects on term of service and the "buy-over" effects from combat skills.

Table 8 shows that the 2+2+4 program has had a modest effect on the term of service distribution. The percentage of recruits choosing two-year enlistments is slightly higher in the program eligible cell, but there is no significant reduction in the probability that a high-quality recruit will choose a four-year enlistment. The buy-down effect is modest and comes from three-year enlistments.

Table 8

DISTRIBUTION BY TERM OF SERVICE: EVIDENCE
FROM THE JOB-OFFER EXPERIMENT (CELL C)

Test Group	Term of Service			Total
	4 years +	3 years	2 years	
2+2+4 Ineligible	3,977 (63.6)	1,206 (19.3)	1,066 (17.1)	6,249 (100.0)
2+2+4 Eligible	9,183 (63.3)	2,382 (16.4)	2,951 (20.3)	14,516 (100.0)

NOTE: Percentages are shown in parentheses.

The job-offer experiment also provides evidence on how the 2+2+4 program affects a recruit's choice of a combat or noncombat job. One possible effect could be to encourage movement across occupational areas, which might pose problems for the Army; for instance, the program might draw recruits away from hard-to-fill combat occupations. Table 9 shows that program eligibility does result in some buy-over from combat jobs. However, this effect appears small; enlistments in combat jobs are only about two percentage points lower in the 2+2+4 eligible group than we would have expected in the absence of the program.

Table 9

DISTRIBUTION BY SKILL: EVIDENCE
FROM THE JOB-OFFER EXPERIMENT (CELL C)

Test Group	Skill Group		Total
	Combat	Noncombat	
2+2+4 Ineligible	2,182 (34.9)	4,067 (65.1)	6,249 (100.0)
2+2+4 Eligible	4,769 (32.9)	9,747 (67.1)	14,516 (100.0)

NOTE: Percentages are shown in parentheses.

Thus, at this point the 2+2+4 program is not resulting in a major shift to shorter terms of service or away from combat occupations. Our more detailed analyses of the job-offer data indicate that, holding constant the size of the market, most 2+2+4 program participants are being drawn from two-year noncombat GI Bill enlistments. Smaller numbers come from three-year noncombat ACF and two-year combat enlistment contracts. The program is having some effect on the choices of incoming recruits, but it is drawing recruits from adjacent enlistment alternatives.

TRENDS IN TOTAL HIGH-QUALITY ENLISTMENTS

One goal of all enlistment incentives is to attract new recruits. The 2+2+4 experiment was designed to assess the market expansion effect through comparisons across test cells. As we have noted, ultimately the best analyses of the market expansion effect will be based on multivariate models, requiring many months of battalion-level enlistment data to obtain acceptable levels of statistical precision.⁵ In the interim, however, we have made some comparisons of enlistments across test cells to gain a preliminary assessment of whether the 2+2+4 program may be attracting new recruits to the Army.

Table 10 illustrates our preliminary method for examining the trend in high-quality

Table 10

MARKET EXPANSION EVIDENCE: GEOGRAPHIC CELL COMPARISONS

Test Group	Number of Contracts		Percent Change, Test to Base	Percent Change, Relative to Cell A ^b
	Base Period ^a	Test Period ^a		
Cell A	6,434	6,969	8.32	
Cell B	6,795	7,555	11.18	2.65

^aThe base period is July through December 1988, and the test period is July through December 1989.

^bThe relative gain in cell B is computed as $100 [(111.18469/108.3152) - 1]$.

⁵After six months, we do not have sufficient data for a complete multivariate analysis of the enlistment effects of the program. Important variables like local unemployment and wages are available from the Bureau of Labor Statistics only with a three-month lag, so much of our historical database on the program is incomplete at this point.

enlistments in the base and test periods. In both test cells, the Army signed more contracts during the test period in 1989 than in the base period in 1988. The Army did relatively better, however, in cell B where the 2+2+4 program was available to all high-quality recruits, than in control cell A. If other things such as local economic conditions and recruiter behavior were unchanged over this time period, then this evidence would suggest that the 2+2+4 program leads to about a 3 percent increase in the number of high-quality contracts. Even under this strong assumption, however, the program effect is measured imprecisely, and at this point it is not significantly different from zero using standard statistical tests.

We have also observed, however, that the estimates of program effects are sensitive to the choice of a base period used in the analysis. For example, if we employ a different base period, say, the six months preceding the test, then cell B had a 5 percent gain in high-quality contracts relative to cell A (see Table 11). If we roll back the clock twelve months, the relative gain is estimated as about 4 percent. The point is not that one base period is preferred to the others, but rather that the market expansion effects are measured imprecisely at this point. Thus we conclude that the program may be expanding the market to some extent, but obtaining a reliable estimate of the market expansion effect must await more months of data and the more comprehensive multivariate methodology.

Table 11
MARKET EXPANSION: COMPARISONS USING
OTHER BASE PERIODS

Base Period	Percent Change Cell B Relative to Cell A	Standard Error
7/88 - 12/88	2.65	2.41
1/89 - 6/89	5.22	2.44
7/88 - 6/89	3.89	2.08

IV. COST-EFFECTIVENESS AND LONGER-TERM EFFECTS

The 2+2+4 program may have significant longer-term effects on Army manning above and beyond its impact on enlistments. These effects could lead to changes in personnel and training costs. In the initial design and implementation phase of the experiment, we did not attempt to specify these effects in detail. However, this section outlines a number of plausible "downstream" effects and suggests how they could be analyzed to assess the cost-effectiveness of the 2+2+4 program. RAND intends to examine these types of effects as part of the 2+2+4 project and related research efforts.

ASSESSMENT METHOD

A full assessment of the 2+2+4 program should compare the cost of the program with alternative means that the Army might use to achieve the same results. In this situation, an appropriate output criterion is the *total number of trained man-years* accrued to the Army by people who serve under the 2+2+4 program, as compared with people who enter under an alternative program. The basic approach is as follows:

- Identify the principal effects of the test program (2+2+4), in terms of trained man-years produced for the Army.
- Examine alternative recruiting and personnel management programs that could achieve the equivalent number of man-years.
- Determine the costs (and savings) of moving from the best alternative program to the test program.

This simple approach is not always applicable because some programs may produce benefits that are incommensurate with others. For example, the most that one may be able to say is that Program A produces a given set of effects with a specified cost, while Program B produces a different set of effects with another cost. However, we believe it is advisable to begin with the equal-effect paradigm; even if incommensurate effects and costs are identified, the choices will be clearly laid out for informed decisionmaking.

RELEVANT FACTORS FOR ANALYSIS

The behavior of Army personnel under the 2+2+4 program is likely to differ from behavior under alternative programs in a number of ways that affect personnel supply and costs. The experiment will provide a stronger base of evidence for identifying such effects than is currently available, because the Army will be able to directly observe the actions of equivalent groups of people who were exposed to alternative programs of interest. Here we outline several factors that have proven significant in past analyses and that should be considered in an assessment of the 2+2+4 program.

Active Forces

Enlistments and terms of commitment. The first step is to execute the experiment long enough to determine the number of enlistments and the distribution of terms for which people sign up under the test and comparison programs. This will provide large, randomly equivalent groups of individuals who entered the Army under the two programs. Any differences between the groups, such as enlistment or reenlistment rates, can then be attributed to the programs.

Attrition and reenlistment rates. It is likely that the two groups will differ in attrition and reenlistment behavior. Recent data suggest that two-year recruits are more likely to complete their term of service than longer-term enlistees of equivalent quality levels. However, two-year enlistees are also less likely to reenlist in the active Army. As a start, the analysis can use data on the behavior of recent cohorts, by term of enlistment, to determine their attrition and retention rates through the second term. As the experiment progresses, the data on earlier nonexperimental cohorts can be updated with observations on the actual attrition and retention rates of the experimental cohorts under the test and control programs.

Trained man-years for alternatives. The above data should make it possible to calculate accurately the expected number of trained man-years that the active Army obtains from a typical recruit under the test and alternative programs. For illustration, suppose we assume that the target number of high-quality man-years required by the Army is the number produced by the test program. The analysis should then examine other methods, such as increased advertising, recruiting staff, or bonuses, that could be used to obtain an equivalent number of trained man-years (considering the enlistment supply responses and the likely attrition and retention rates associated with such programs). Previous studies of personnel supply should provide most of the relevant parameter estimates, such as the marginal cost of

recruiting. Using such data, the analysis should be able to derive a feasible alternative method of managing the personnel system to obtain the same output (trained man-years) as one would obtain from the test program.

Cost changes. Having determined a feasible alternative to accomplish the same outcome, the analysis should then estimate the changes in resource costs required to support it. For example, the 2+2+4 test program is likely to require the initial training of more recruits per year than alternatives that encourage longer-term enlistments. Thus the test program will probably incur higher training costs. However, recruiting costs will probably decline because some new enlistees will be attracted by the 2+2+4 program, and less money will have to be spent to recruit the same number of people. The analysis needs to consider a broad range of such costs, supported wherever possible by empirical assessments of the behavior of the test and control cohorts from the experiment. This should lead to an integrated estimate of the total cost (or saving) incurred by moving from the test program to an alternative.

Reserve Forces

The same principles and procedures apply to the reserve components (except eligibility for the ACF) as to the active forces. The reserves differ, however, in that they can benefit from recruiting prior-service personnel who have left the active component and who already have some relevant training. To consider these advantages, we recommend analysis of the following key factors in the reserves.

Accessions into the reserve components. Historical data suggest that two-year active personnel are more likely to join the reserves than three- or four-year personnel. The new program, moreover, adds a reserve service commitment that should amplify this effect. By tracking the test and control cohorts, the analysis should be able to more precisely determine the effect of the 2+2+4 program provisions on entry into the Selected Reserve.

Continuity in the reserves. Significant numbers of people who enter the Selected Reserve transfer to the Individual Ready Reserve and the Inactive National Guard (ING) after a year or two. Presumably, participants in the 2+2+4 program will have a strong incentive (the ACF payment) to remain at least two years. This staying power could be an important advantage of the program, which the analysis should assess empirically. Combined with increased accessions into the Selected Reserve, such effects could increase the number of trained man-years available to the reserves. This, in turn, should reduce the demand for reserve accessions and enable the reserves to reduce recruiting costs, particularly

since the costs of recruiting two-year prior-service personnel are likely to be lower than recruiting new, nonprior-service personnel. The analysis should trace such effects and determine the potential reduction in recruiting demand.

Matching of active and reserve skills. A prior-service person who enters his unit with appropriate skill training is considerably more valuable to the unit than a person trained in a nonmatching job. At present, we estimate that about half of all prior-service entrants to the Selected Reserve serve in the same skill as they did in the active forces. Thus, "MOS-mismatching" is a significant problem. To the extent that the 2+2+4 program can promote active-reserve skill matching, it will also increase reserve readiness and/or reduce reserve training costs. (A skill-mismatched reservist must undergo retraining either on the job or via a service school; in either case costs are imposed on the reserve forces.) To estimate the possible savings to the reserves by using the 2+2+4 program, the analysis should trace the MOS matching rates of program participants and compare them with people who enter under alternative programs.

As in the active case, the reserve analysis should combine the above estimates into a model that will permit assessment of alternative policies for achieving a given objective of reserve manning (if possible, measured in number of trained man-years). The model should then make explicit the magnitude of costs that would be saved or imposed by changing from the 2+2+4 program to an alternative.

We believe that the empirical data to estimate the above parameters for the active forces are available or within reach. For the Selected Reserve, however, the data are very thin, particularly in the areas of estimating the marginal cost of recruiting prior-service and nonprior-service personnel and of training a reservist to the same proficiency as an active-duty graduate. Accordingly, simultaneous research may be needed (along with the 2+2+4 evaluation effort) to provide adequate empirical estimates of reserve recruiting and training costs.

V. CONCLUSIONS

The design and interim results of the 2+2+4 test point to a number of tentative conclusions about the program and about Army recruiting more generally. First, we believe that the new program has provisions that offer promise. Lengthening the two-year commitment to include school training time will help to reduce turnover costs associated with short tours. The imposition of a reserve obligation should help the Selected Reserves reduce training requirements and hold down training costs. In addition, if a large fraction of the reserve tours are served in skills that match the soldier's active duty MOS, the reserves may capture benefits from skill training in which the active Army has already invested. The issues, of course, concern the extent of these possible effects and how they can be measured empirically.

The test, under way since July 1989, has established a framework for systematic assessment of these issues associated with the 2+2+4 program. It has also set up a precise mechanism for possible future tests of other enlistment options through individually randomized assignment in the REQUEST system. This mechanism is working smoothly and is providing data on a quick-turnaround basis.

Results to date indicate that a substantial number of recruits are willing to commit for two years in the Selected Reserve in order to obtain an ACF benefit. The Army has written 2,705 nonprior-service contracts under the program during the first six months of the experiment. This contract rate represents 8 percent of all nonprior service contracts for high-quality personnel and 30 percent of high-quality contracts in the 19 occupational skills eligible for the program. The participation rates indicate that the program's appeal covers a broad range of noncombat skills.

These results do not, of course, demonstrate the full range of possible program effects on the Army. At this stage in the experiment, only some of the possible effects can be examined with a reasonable degree of precision. Primarily these are *distribution* effects on term of service and skill choices, which can be observed in the job-offer portion of the test. Because of the large number of individual enlistees who were randomly assigned to program eligibility or ineligibility, the job-offer data provide fairly reliable estimates of the "buy-down" effects on term of service and the "buy-over" effects from combat to noncombat skills. The results to date suggest that the 2+2+4 program has not caused a large exodus from longer terms of service or from the combat skills. Comparing persons eligible for the

program with those who were not eligible, we found that the fraction enlisting for four or more years remained virtually the same (63 percent), while the fraction enlisting for only two years was slightly higher in the eligible group (20 vs. 17 percent). Similarly, the fraction enlisting in noncombat skills was slightly higher in the eligible group than in the ineligible group (35 vs. 33 percent).

Assessment of a possible market expansion effect at this point is subject to more uncertainty because market expansion must be inferred from geographic comparisons among test cells. These comparisons involve smaller sample sizes, and to obtain the most sensitive estimates we will need to perform multivariate analyses involving additional data that are not yet available (e.g., unemployment rates from the Bureau of Labor Statistics).

In the interim, the best evidence on market expansion comes from simple tabulations comparing year-to-year changes in the test areas, where the program is available, with changes in the control areas, where it has been withheld. These comparisons indicate that program areas have outperformed the control areas by 3 to 5 percent in producing high-quality enlistments. However, this result is not statistically significant in the current database, in part because the data set is still small and consequently our comparisons lack precision. A more reliable estimate of the market expansion effect will be available in the future, but we need more months of data and the more comprehensive multivariate methodology before we can say whether the program has significantly increased the number of high-quality recruits entering the Army. Our statistical analyses and experience suggest that the enlistment test should be continued for the total planned period of 15 months to accumulate a sufficient sample size.

Finally, it should be emphasized that a long-term perspective will be needed to develop a comprehensive assessment of the program's ultimate effects on the reserve components. In the near term, it will be possible to model the probable downstream program effects assuming that future cohorts (including the test program groups) will behave as cohorts did in the past. Then the model can be used to examine variations in Army costs and personnel supply, given reasonable ranges of such parameters as active Army attrition rates, reenlistment rates, and rates of transition from the active to the reserve components. However, a complete analysis will need to consider the actual behavior of the experimental cohorts as they pass through their term of active service and join the Selected Reserve. Therefore, our long-term plan includes an annual follow-up of the active and reserve status of the test cohorts, using official records. Such follow-up will be necessary to address long-run issues of the program's cost-effectiveness.

Appendix
INITIAL SKILLS ELIGIBLE FOR 2+2+4 TEST

MOS	Description	Total Seats ^a	1-3a Fill ^b (%)	Training Weeks ^c	Reserve Coverage ^d (%)
<i>SIGNAL/COMMUNICATIONS</i>					
31C	Single Channel Radio Operator	1891	70	13	85
31K	Combat Signaler	1829	51	11	95
31L	Wire Systems Installer	986	54	9	47
31V	Unit Communications Maintainer	1060	61	13	67
72E	Telecommunications Operator	846	59	10	84
<i>MAINTENANCE</i>					
52D	Power Generator Repairer	1527	50	10	91
62B	Construction Equipment Repairer	511	48	9	89
63B	Light Wheel Vehicle Mechanic	3406	49	12	98
63J	Chemical Equipment Repairer	433	45	12	85
63S	Heavy Wheel Vehicle Mechanic	1100	62	8	91
<i>CONSTRUCTION</i>					
51B	Carpenter/Mason	421	53	7	84
62F	Crane Operator	214	50	8	80
62J	Construction Equipment Operator	454	53	8	76
<i>SUPPLY, SERVICE, AND MEDICAL</i>					
55B	Ammunition Specialist	789	55	5	56
76C	Equipment Records & Parts Spec.	1580	60	12	95
76Y	Unit Supply Specialist	2198	54	7	98
77F	Petroleum Supply Specialist	1818	49	9	91
88M	Motor Transport Operator	4853	49	8	91
91A	Combat Medic	4586	61	10	73

^aNumber of MOS training seats in FY89 program. Requires completion of basic training by October 1, 1989.

^bPercentage of Category 1-3a seats in FY89 program that were filled by February 1989. The February goal for FY89 training seats was 79 percent.

^cNumber of weeks of Advanced Individual Training (skill training). In addition, each recruit receives eight weeks of basic training.

^dPercentage of the Army's recruiting battalions that have vacancies in the MOS.